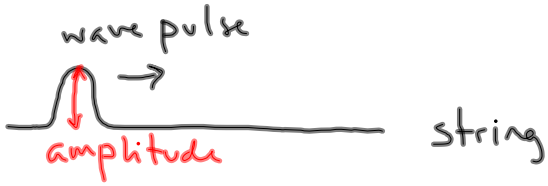
Waves, Sound, and Light:

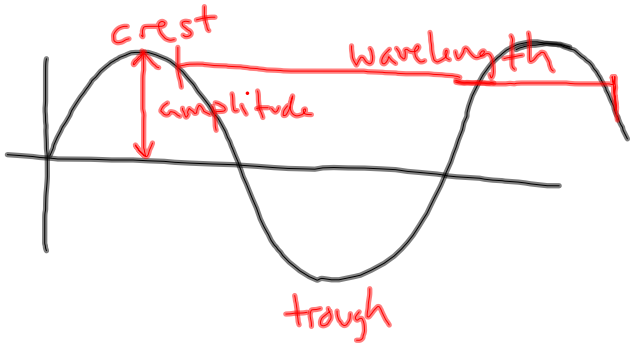
- How is a wave created?
  - Sudden transfer of energy
  - Energy bouncing
  - Sound wave by making a string oscillate quickly
  - Movement
  - Transfer of energy from one point to another

★ energy is transfered in a repeating way

Wave Definitions:



- For mechanical waves, there must be some medium to carry the energy.



wavelength → distance to complete one cycle
λ (lambda) (meters)

period → time it takes for completion of one wave cycle
T (seconds)

frequency → number of cycles per second
f ($\frac{1}{\text{seconds}}$ = Hertz) Hz

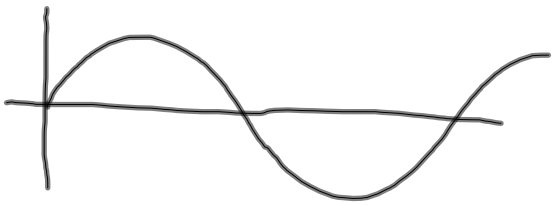
wave velocity

$$V = \lambda f = \frac{\lambda}{T}$$

Relationship between period and frequency:

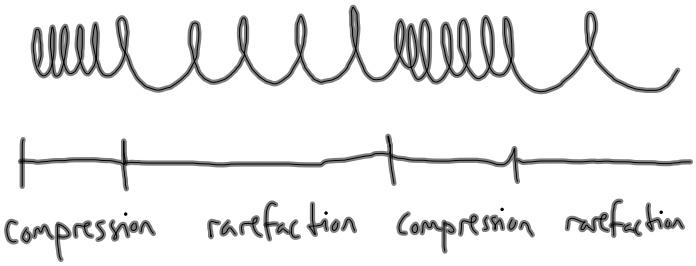
$$T = \frac{1}{f}$$

- Transverse Wave:



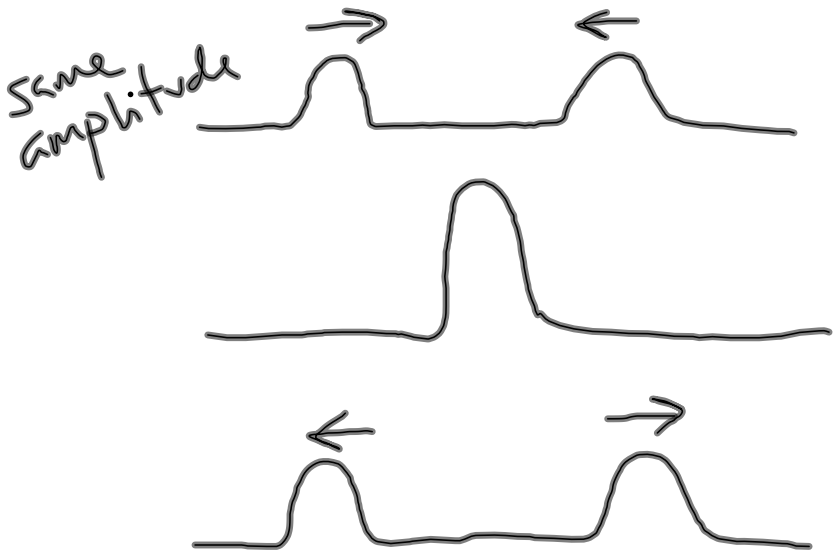
- we can model this as a sine curve
- amplitude is perpendicular to the wave motion

- Longitudinal wave:

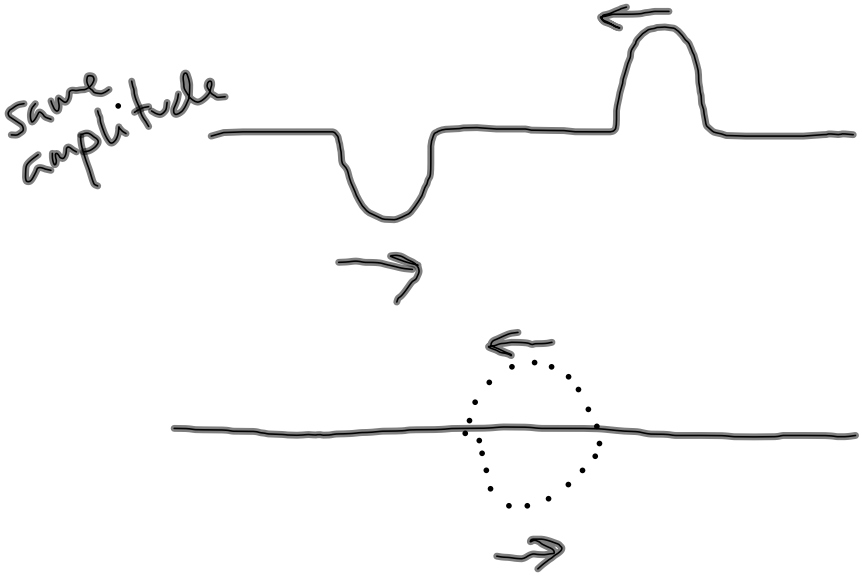


- Wave combinations:

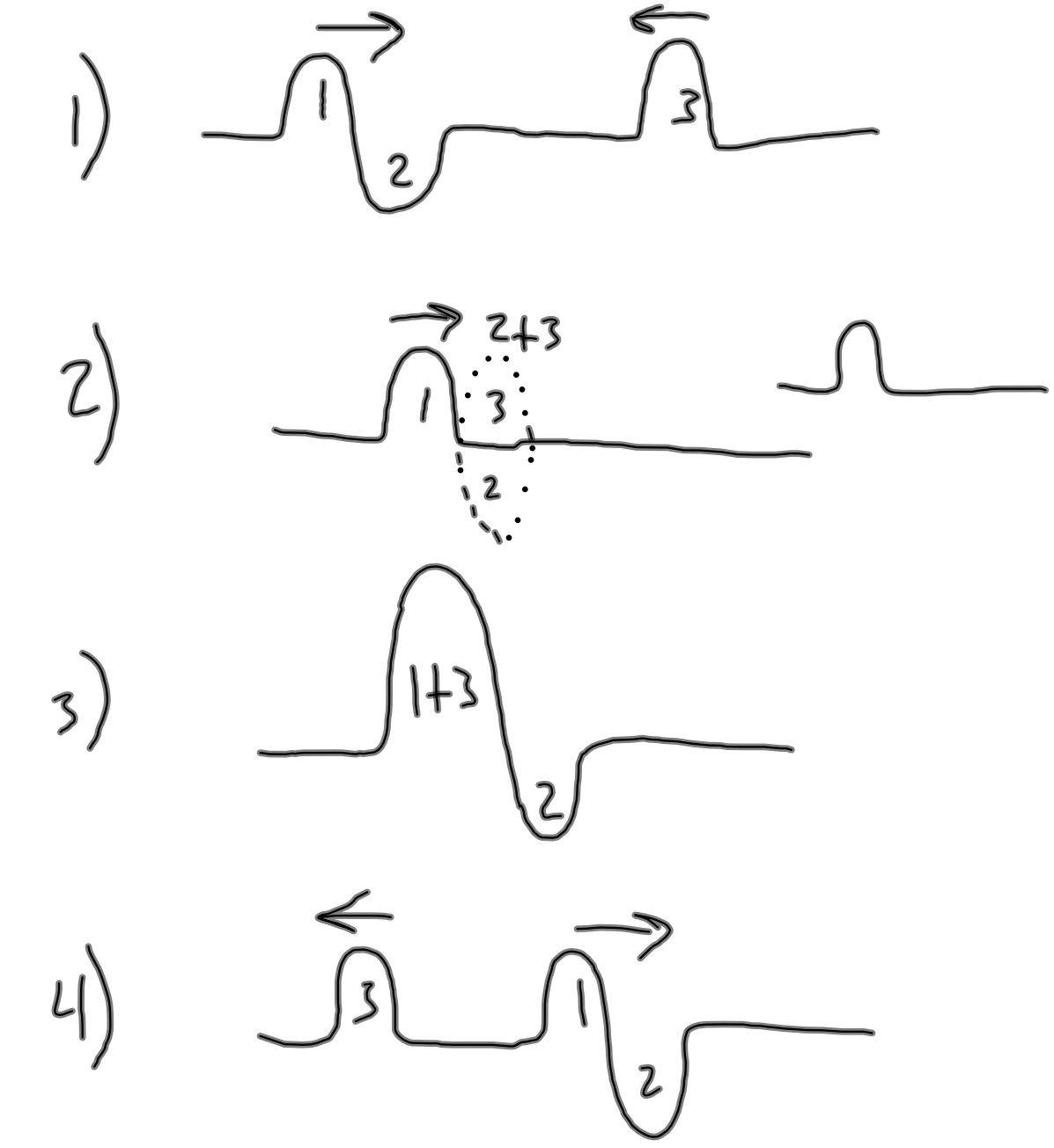
  - Constructive interference



  - Destructive interference

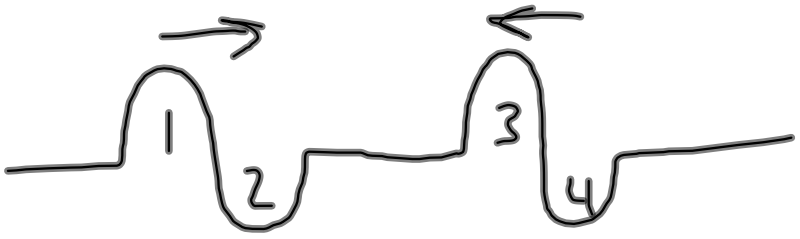


Example:

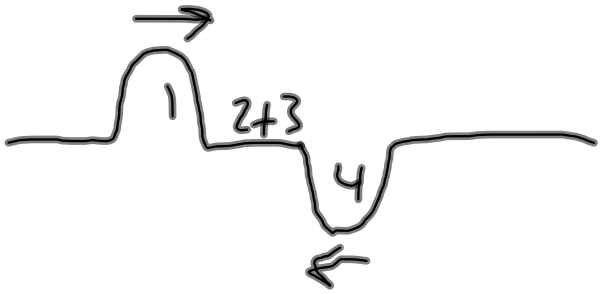


Example 2:

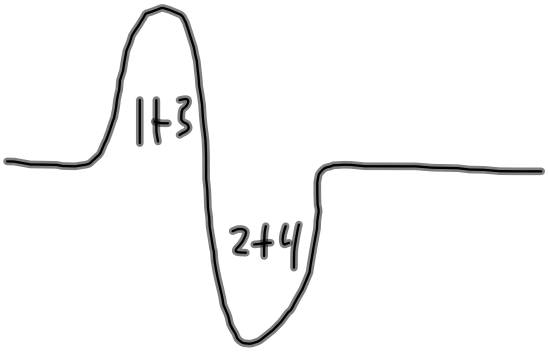
1)



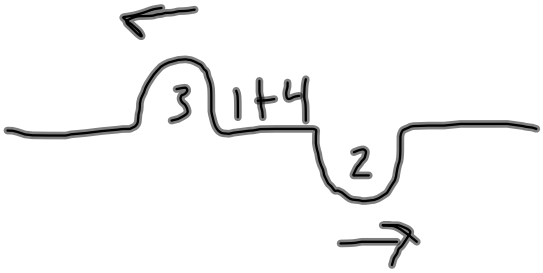
2)



3)



4)



5)